

इंटरनेट

मानक

### Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

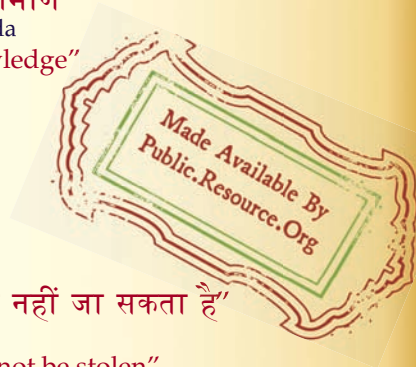
IS 10259 (1982): General conditions for delivery and inspection of aluminium and aluminium alloy products [MTD 7: Light Metals and their Alloys]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE

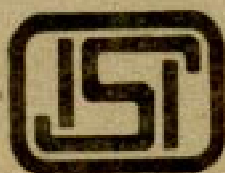


**IS : 10259 - 1982**

*Indian Standard*

**GENERAL CONDITION OF DELIVERY AND  
INSPECTION OF ALUMINIUM AND  
ALUMINIUM ALLOY PRODUCTS**

UDC 669.71-4 : 006.87



© Copyright 1982

**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## GENERAL CONDITION OF DELIVERY AND INSPECTION OF ALUMINIUM AND ALUMINIUM ALLOY PRODUCTS

### Light Metals and Their Alloys Sectional Committee, SMDC 10

#### Chairman

DR RAJINDERA KUMAR

#### Representing

National Metallurgical Laboratory (CSIR),  
Jamshedpur

#### Members

SHRI V. K. AGARWAL

Hindustan Aluminium Corporation Ltd, Renukoot,  
Dist Mirzapur

SHRI K. L. BARUI

National Test House, Calcutta

SHRI PREM BAVEJA

Hindustan Aeronautics Ltd (Bangalore Division),  
Bangalore

SHRI R. KUPPASWAMY (*Alternate*)

Ministry of Defence (DGOF)

SHRI B. D. BISWAS

The Premier Automobiles Ltd, Bombay

SHRI A. T. BORATE

The Institute of Indian Foundrymen, Calcutta

SHRI B. R. DUTTA

SHRI A. GUHA (*Alternate*)

Indian Aluminium Co Ltd, Calcutta

SHRI A. K. HAJRA

SHRI K. SURYANARAYANAN (*Alternate*)

JOINT DIRECTOR (MET), RDSO,

Ministry of Railways

LUCKNOW

CHEMIST & METALLURGIST,

ICF, MADRAS (*Alternate*)

JOINT DIRECTOR STANDARDS

Ministry of Railways

(CARRIAGE), RDSO, LUCKNOW

DEPUTY DIRECTOR STANDARDS

(CARRIAGE)-I (*Alternate*)

SHRI P. M. JOSEPH

Aluminium Industries Ltd, Madras

SHRI M. K. JOSHI

Ministry of Defence (R&D)

SHRI I. N. BHATIA (*Alternate*)

SHRI S. K. KHANNA

Ministry of Defence (DGI)

SHRI P. M. SENGUPTA (*Alternate*)

DR MANJIT SINGH

Office of Development Commissioner (Small  
Scale Industries), New Delhi

SHRI O. P. MATHUR

Electrical Manufacturing Co Ltd, Calcutta

SHRI S. C. MALHOTRA (*Alternate*)

(Continued on page 2)

© Copyright 1982

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

( Continued from page 1 )

<i>Members</i>	<i>Representing</i>
SHRI L. MISHRA	Directorate General of Technical Development, New Delhi
SHRI U. MOHAN RAO	Bharat Heavy Electricals Ltd, Secunderabad
SHRI K. K. SEN GODAN ( Alternate I )	
SHRI A. V. HARNE ( Alternate II )	
SHRI D. MUKHERJEE	Bharat Aluminium Co Ltd, New Delhi
SHRI S. K. MALHOTRA ( Alternate )	
SHRI K. R. RAGHUNATH	Jindal Aluminium Ltd, Bangalore
SHRI R. RAMDAS	India Government Mint ( Ministry of Finance ), Hyderabad
REPRESENTATIVE	Indian Standard Metal Co Ltd, Bombay
SHRI M. S. SESHADRI	India Pistons Ltd, Madras
SHRI R. N. SAHA	Directorate General of Supplies & Disposals, New Delhi
SHRI DIPANKAR KIRTI ( Alternate )	
SHRI N. SHANMUGHAM	Madras Aluminium Co Ltd, Mettur Dam
SHRI H. K. SHARAFF	Federation of Engineering Industries of India, New Delhi
SHRI H. L. BHARDWAJ ( Alternate )	
SHRI B. A. SHENOI	Central Electrochemical Research Institute (CSIR), Karaikudi
SHRI P. S. DESIKAN ( Alternate )	
SHRI K. SWAMIAPPAN	Directorate of Technical Development and Production (AIR), New Delhi
SHRI C. R. RAMA RAO, Director ( Struc & Met )	Director General, ISI ( <i>Ex-officio Member</i> )
	<i>Secretary</i>
	SHRI B. MUKHERJI
	Deputy Director ( Metals ), ISI

# *Indian Standard*

## GENERAL CONDITION OF DELIVERY AND INSPECTION OF ALUMINIUM AND ALUMINIUM ALLOY PRODUCTS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 23 August 1982, after the draft finalized by the Metals and Their Alloys Sectional Committee had been approved by the Structural and Metals Division Council.

**0.2** This standard has been formulated for guidance of the manufacturers, suppliers and consumers of aluminium and aluminium alloy products in respect of the delivery requirements as well as the conditions to be specified in the tender, inquiry, purchase order.

---

### 1. SCOPE

**1.1** This standard covers the general conditions of delivery and inspection of aluminium and aluminium alloy products conforming to various Indian Standard specifications.

**1.2** If considered acceptable to the parties concerned this standard may be used in part or whole for aluminium and aluminium alloys conforming to other standards also.

**1.3** This standard applies mainly to wrought products in the as-delivered condition.

### 2. TERMINOLOGY

**2.0** For the purpose of this standard, the following definitions shall apply.

**2.1 Producer/Manufacturer** — The firm that produces/manufactures the material in the required form in which it is consigned to the purchaser.

**2.2 Supplier** — The party or person supplying the material shall be called supplier; he may or may not be the actual manufacturer of the material. The term 'supplier' shall also cover any party with whom the supplier places order for partial compliance.

**2.3 Purchaser** — The party or person purchasing the material. The term 'Purchaser' shall cover person or persons authorised by the purchaser to act on this behalf for material inspection or other purposes.

### **3. TENDER INFORMATION**

**3.1** It shall be the responsibility of the purchaser to define the product required by him and to supply the following details concerning the product:

- a) The type of product required (for example, rolled sheet, extruded tubes, etc);
- b) The aluminium alloy and its temper for the desired product. In case the conditions in which material is to be used differs from the conditions in which it is desired, then the same should also be mentioned;
- c) The Indian Standard specification number or the properties concerning the product should be stated;
- d) Shape and dimensions or drawing defining the product. The tolerances on dimensions to be given. If Indian Standard specification exists then reference to the same should be given;
- e) Quantity required in term of weight or number;
- f) Any other special requirement agreed between the supplier and the purchaser. The special requirement may include requirement of certificate of conformity, type of packing, mode of transport, etc;
- g) Critical areas in which interlocking components or sliding components are fitted should be mentioned with specific information on tolerances; and
- h) The end application and the required finish, like painting, anodising, etc, should be mentioned.

### **4. PRODUCTION/MANUFACTURING REQUIREMENTS**

**4.1 Process** — The producer/manufacturer is free to select the production and manufacturing process to be utilized for the product and there shall be no binding on the producer to utilize the same process for subsequent and similar orders. If the purchaser wants any particular process to be used for production and manufacture of the product, then the same should be specified in the order.

**4.2 Quality Assurance** — Before despatching the material, it shall be the responsibility of the supplier to ensure that the material conforms to

the desired specifications as per the order and satisfies all the tests and inspection requirements.

**4.3 Properties of Materials** — The chemical composition, mechanical, physical or other properties of the material shall be in accordance with the relevant Indian Standard specification for the material and the product or with those agreed between the supplier and the purchaser and mentioned in the tender/order.

#### **4.4 Freedom from Defects**

**4.4.1** The material shall be free from harmful defects which are prejudicial to the subsequent manufacture, fabrication or use of the material.

**4.4.2** The material having manufacturing defect, although it may have been passed previously on chemical composition and mechanical tests, shall be rejected. The rejection should be only with respect to those items having manufacturing defects and not the whole lot.

**4.5 Dimensional Tolerance** — The product shall be within dimensional tolerances as per the order or Indian Standard specification relating to the product. Unless otherwise agreed between the supplier and the purchaser the material with dimensions outside the specified tolerance limits may be rejected by the purchaser.

### **5. INSPECTION AND TESTING**

#### **5.1 Sampling**

**5.1.1 For Chemical Composition** — One sample shall be taken to represent 2 000 kg or fraction thereof of the material despatched, except that not more than one sample shall be required per piece. For wet analysis sample shall be taken out according to IS:1817-1961\*, while for spectrochemical or other analytical method samples shall be taken out so as to suit the analytical method utilized.

**5.1.2 For Mechanical and Other Tests** — The required number of test samples from each batch/lot shall be selected as per relevant Indian Standard or procedure of testing. For any special product characteristic and in absence of Indian Standard specification, sample shall be selected according to mutual agreement between the supplier and the purchaser.

**5.1.2.1** In the case of aluminium and non heat-treatable aluminium alloys, the selected test samples shall not be subjected to any thermal or mechanical treatment ( except straightening and machining to the shape of the test piece ) before they are tested.

---

\*Methods of sampling non-ferrous metals for chemical analysis.

**5.1.2.2** In the case of heat-treatable aluminium alloys for materials supplied in the as-manufactured or annealed condition, the test samples may be heat-treated and tested in that condition; if so specified by the purchaser. The test samples, after heat-treatment shall not be mechanically worked ( except by straightening and machining to the shape of the test piece ) before they are tested.

NOTE — One batch shall consist of a group of products which has the same nominal thickness/diameter from the same cast under the same production conditions. If heat-treated, then they should have been heat-treated under the same heat-treatment conditions.

## 5.2 Testing

**5.2.1 Chemical Composition** — The chemical composition of the material shall be determined either by the method specified in IS : 504-1963\* or any other instrumental/chemical method.

In case of dispute, the procedure given in the latest edition of IS : 504 shall be the refer method.

**5.2.2 Mechanical Tests** — Mechanical testing shall be carried out in accordance with the methods given below:

- a) For tensile test, the procedure of testing and preparation of test pieces shall be in accordance with IS : 1816-1979†,
- b) Bend tests for rolled sheet and strip shall be carried out in accordance with IS : 4598-1968‡,
- c) The wires shall be tested in accordance with IS : 2658-1964§, IS : 4168-1967|| and IS : 4176-1967¶.
- d) The tube shall be tested in accordance with IS : 2657-1967\*\*, IS : 4177-1967†† and IS : 4599-1968‡‡.

**5.3 Special Tests** — Some special tests are required for product to be used for certain specific applications. These tests are described in relevant Indian Standard specification which should be referred to for products concerning these special requirements.

---

\*Methods of chemical analysis of aluminium and its alloys ( revised ).

†Tensile test for light metals and their alloys.

‡Method for simple bend test for aluminium alloy sheet and strip of thickness between 0.2 mm and 7 mm.

§Method for tensile testing of aluminium and aluminium alloy wire.

||Method for wrapping test of aluminium and aluminium alloy wire.

¶Method for simple torsion test of aluminium and aluminium alloy wire.

\*\*Method for tensile testing of aluminium and aluminium alloy tubes.

††Method for flattening test of aluminium and aluminium alloy tubes.

‡‡Method for drift expanding test on aluminium and aluminium alloy tubes.

**5.4 Dimensional Inspection** — The dimensional checking shall be done with the help of proper measuring instruments which ensure the accuracy required in dimensions and dimensional tolerances in accordance with the relevant Indian Standard specifications.

### **5.5 Finish and Workmanship**

**5.5.1** The product shall be free from injurious surface defects. Unless otherwise specified, the product should be supplied in mill or workman-like finish. Discoloration characteristics due to heat treatment shall not be a cause for rejection.

**5.5.2** Unless otherwise agreed between the parties concerned, surface examination shall be carried out with the naked eye without the assistance of any magnifying apparatus.

**5.6 Inspection** — The purchaser shall notify the supplier when placing the order, if it is his intention to inspect the material at the supplier's works. The supplier shall afford the purchaser of reasonable facilities to satisfy himself that the material is in accordance with the standard. For this purpose, the purchaser or his representative may, by prior arrangement, attend to inspect the material, to select and identify the test samples for testing and to witness the tests being made.

## **6. REJECTION AND RETEST**

**6.1 Rejection** — Only the material failing to conform to the requirements of the material standard or specification may be rejected by the purchaser.

**6.2 Retests** — If any test specimen fails to satisfy the specified mechanical properties requirements, then the following procedure shall be adopted by the inspection authority:

- a) Select for test from the same batch two further test samples, one of which shall be from the test pieces from which the original test sample was taken, unless it has been withdrawn by the supplier. Both the test specimen prepared from these retest samples shall satisfy the mechanical properties requirements. If either of these specimens fails to conform to the applicable requirements, the material may be rejected; and
- b) For annealed or heat-treated material, the supplier has right, if he desires, to re-anneal or re-heat-treat the material before selecting the two retest specimens. However, material shall not be re-heat-treated more than once.

**6.2.1** For other properties, the relevant standard or order conditions should be consulted.

## **7. CERTIFICATION**

**7.1** The supplier shall, on request, furnish to the purchaser a certificate stating that the material has been tested and inspected in accordance with the relevant standard/specifications as per order, and has been found in conformity with the requirements.

## **8. PACKING AND MARKING**

**8.1 Packing** — The material shall be packed in such a manner so as to prevent damage in ordinary handling and transportation. Unless otherwise mentioned in the order, the type of packing and gross weight of individual package will be left to the discretion of the supplier. Each package shall contain only one size, alloy, or temper of material when packed for despatch unless otherwise agreed upon.

**8.2 Marking** — Each package shall be marked as per the discretion of the supplier unless it is otherwise agreed upon or mentioned in relevant standard/specification according to the order.

## **9. INDEPENDENT TEST**

**9.1** Should there be a dispute about the compliance of the material with material specification, the supplier and the purchaser each shall have the right to get the material tested by a mutually acceptable independent testing authority.

**9.2** The results obtained by the independent testing authority shall be accepted as final. If the material does not comply with the material specification, the cost of independent testing shall be borne by the supplier; if the material complies with the material specification, the cost shall be borne by the purchaser.